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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,590	12/31/2003	Bradley Nelson	AUS920030119US1	8597
42640	7590	09/07/2006	EXAMINER	
DILLON & YUDELL LLP 8911 NORTH CAPITAL OF TEXAS HWY SUITE 2110 AUSTIN, TX 78759			SILVER, DAVID	
			ART UNIT	PAPER NUMBER
			2128	

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/750,590

Applicant(s)

NELSON ET AL.

Examiner

David Silver

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-45 are pending in Instant Application.

Information Disclosure Statement

2. Applicants and Assignee— INTERNATIONAL BUSINESS MACHINES CORPORATION—have not submitted an IDS. However, it is noted that the background of the Specification discloses verification, debugging of digital design, trace files, tracing, and HDL.

Drawings

3. Figures 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D, 4E, 5A, 5B, 6A, 6B, 7 (counter), and 17 should be designated as --Prior Art-- because only that which is old is illustrated (**See US Pat. 6,195,629 figures**). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 1 is objected to because of the following informalities:

Note line 3 of claim 1, "specifying one or entities" presents a grammatical error.

Appropriate correction is required.

Claim Interpretation

5. The mere ability, enablement or intended use to perform a function does not necessitate the performance of such function. As such, any prior art not explicitly prohibiting the performance of a function inherently allows for the performance of such function and therefore reads on the limitation. For example, claim 1 recites "specifying a trace array for storing trace data that will be generated though simulation of the simulation model". The claim however does not necessitate that the trace data is stored on the trace array. Another example is claim 2, which recites "specifying a set of

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signals *for which values are to be presented within the trace array*".

6. As per claims 4, and 5, it is interpreted that the HDL file is declaring the instrumentation and design entity, respectively. The instant claims are merely exemplary.
7. Claims 17-20, 22-26, 28-29, 32-35, 37-41, and 43-44 are not invoking 35 U.S.C. 112 sixth paragraph for the below emphasized reason:

MPEP 2181 Identifying a 35 U.S.C. - 2100 Patentability recites:

A claim limitation will be interpreted to invoke 35 U.S.C. 112, sixth paragraph, if it meets the following 3-prong analysis:

(A) the claim limitations must use the phrase "means for" or "step for;"

(B) the "means for" or "step for" must be modified by functional language; and

(C) the phrase "means for" or "step for" must not be modified by sufficient structure, material or acts for achieving the specified function.

In view of MPEP 2181 (prong (C)), although the claims recite "means for" it is determined that the details following the "for" refers to intended use and does not invoke 35 USC 112 sixth paragraph.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 6-11 and 31-45 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
- 8.1 The method claims do not produce a useful, tangible, and concrete **result**. The steps of the method claims do not produce a useful, tangible, and concrete result. They merely recite a software algorithm, *per se*, which, for example, does not display, store, or otherwise provide a useful tangible output. Note exemplary claim 6 which only recites software steps of parsing and processing and does not produce a useful tangible and concrete result.
- 8.2 Claims 31-45 recite a program product. According to the Specification (**page 76**), a set of instructions can be referred to as a "program product". Therefore it is reasonable to interpret a program product as a set of instructions (software, *per se*) and therefore non-statutory subject matter. Software, *per se*, is non-statutory because it is not useful, tangible, and concrete.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using

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it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 3, 11, 26, and 41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the **enablement requirement**. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claim 3, the claims do not enable one of ordinary skill in the art to make and use the invention without undue experimentation because they do not enable "specifying a trace array comprises specifying an association between an enumerated value and a set of values of said signals". How is the association established? How are the enumerated values established? What are the enumerated values? What does an enumerated value represent? What does an enumerated value consist of? The Examiner is well aware of the term "enumerated value" in the context of programming; however, in the context of the claim this term is not enabled.

As per claims 11, 26, and 41, the claims to not enable one of ordinary skill in the art to make and use the invention without undue experimentation because they do not enable "automatically replicating said trace array within a plurality of instance of an entity declared by an HDL file". How are they automatically replicated?

10. Claims 11, 26, and 41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the **written description requirement**. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As per claims 11, 26, and 41, the Specification fails to comply with the written description requirement. Specifically, the specification does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention the following

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features: "automatically replicating said trace array within a plurality of instance of an entity declared by an HDL file". How are they automatically replicated? Paragraph 234 of the Specification discloses, in part: "In this manner, the software tools hereinbefore described automatically replicate a trace array and associated support logic for every instance of the entity with which the trace array is associated." The Specification does not comply with the written description requirement because it does not disclose how such automatic replication takes place or by what means.

11. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for **omitting essential steps**, such omission amounting to a gap between the steps. See MPEP § 2172.01.

As per claim 1, the omitted step is: simulation of the simulation model.

12. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being **indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 1, it is vague and indefinite to which element the phrase "that will be generated through simulation of the simulation model" is referring. Is this phrase referring to trace array or the trace data?

As per claim 3, it is unclear what "specifying a trace array comprises specifying an association between an enumerated value and a set of values of said signals" is attempting to claim.

13. The above cited rejections are merely exemplary.

14. The Applicant(s) are respectfully requested to correct all similar errors.

15. Claims not specifically mentioned are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

16. Claims 1-10, 16-25, and 31-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Schubert

(US 6,581,191).

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Schubert discloses: 1. A method of specifying a trace array for a simulation in a data processing system, said method comprising:

specifying one or entities within a simulation model with one or more statements in one or more hardware description language (HDL) files (**Fig 2 item 202, Fig 4A item 402 and text which further the features**);

in one or more statements in the one or more HDL files, specifying a trace array for storing trace data that will be generated through simulation of the simulation model (**col: 5 line: 1-8: trace array ... scan chain**); and

storing said one or more HDL files (**col: 5 line: 9-26**).

Schubert discloses: 2. The method of claim 1, wherein said specifying a trace array comprises specifying a set of signals for which values are to be presented within the trace array (**col: 28 line: 19-26; col: 5 line: 1-8: trace array ... scan chain**).

Schubert discloses: 3. The method of claim 2, wherein specifying a trace array comprises specifying an association between an enumerated value and a set of values of said signals (**col: 37 line: 44-59; col: 36 line: 50-61 (code); col: 36 line: 5-11 (code); col: 31 line: 15-28 (code); col: 6 line: 39-47**).

Schubert discloses: 4. The method of claim 1, wherein said specifying said trace array comprises specifying said trace array in one or more statements within an HDL file declaring an instrumentation entity containing the trace array (**Fig 3 item 326; col: 6 line: 28-47; Fig 2, 3, 4A/B and texts which further expand on their features**).

Schubert discloses: 5. The method of claim 1, wherein said specifying said trace array comprises specifying said trace array comprises specifying said trace array within an HDL file declaring a design entity (**col: 6 line: 28-47; Fig 8, 9, 11, 12, 13 and texts which further expand on their features**).

As per claims 16-20 and 31-35, note the rejection of claims 1-5 above. The Instant Claims are functionally equivalent to the above-rejected claims and therefore rejected under same prior-art teachings.

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As per claims 6-10, 21-25, 36-40, note the rejection of claims 1-5 above. The Instant Claims are functionally equivalent to the above-rejected claims and therefore rejected under same prior-art teachings but for parsing the said one or more HDL files, which is disclose on: **(col: 15 line: 40-47 "The HDL description is then parsed and analyzed 404". Fig 2, 4A/B).**

Schubert discloses: 12. A method of reporting simulation data obtained by the simulation of a digital design within a data processing system, said method comprising:

a simulator running a testcase against a simulation model formed of representations of the plurality of the design entities and a trace array within one of the plurality of design entities **(col: 48 line: 56-65; col: 50 line: 57-58; col: 2 line: 14-49; col: 2 line: 50-61; col: 3 line: 63 to col: 4 line: 25; col: 11 line: 21-28);**

recording trace data within the trace array during said simulation **(col: 26 line: 57 to col: 27 line: 2 (including the contents incorporated by reference); col: 5 line: 6-8);** and

exporting said trace data from said trace array in a trace file and storing said trace file in data storage **(col: 5 line: 6-8).**

Schubert discloses: 13. The method of claim 12, wherein recording trace data includes recording, within the trace array, values assumed by a set of signals during simulation **(col: 5 line: 6-8).**

Schubert discloses: 14. The method of claim 13, wherein exporting the trace data in a trace file includes exporting the trace data in a trace file indicating an association between an enumerated value and a set of values of said signals **(col: 37 line: 44-59; col: 36 line: 50-61 (code); col: 36 line: 5-11 (code); col: 31 line: 15-28 (code); col: 6 line: 39-47).**

15. The method of claim 12, and further comprising instantiating the trace array within an instrumentation entity within the simulation model **(Fig 3 item 326; col: 6 line: 28-47; Fig 2, 3, 4A/B and texts which further expand on their features).**

As per claims 27-30 42-45, note the rejection of claims 12-15 above. The Instant Claims are functionally equivalent to the above-rejected claims and therefore rejected under same prior-art teachings.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. Claims 11, 26, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schubert (**US 6,581,191**) as applied to claims 1, 21, and 36 above, and further in view of Official Notice taken.

As per claim 11, Schubert discloses all limitations of claim 6. Schubert however does not expressly disclose "said parsing and processing includes automatically replicating said trace array within a plurality of instances of an entity declared by an HDL file containing the one or more statements specifying the trace array. Official Notice is take with respect to this limitation. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the feature in order to save money on code development and re-use and modularize code that is rather than re-programming the entire core every time a change occurs to the trace array. An example of this is C++'s use of the directive "#include", which replaces the #include statement with the file references therewith.

As per claims 26 and 41, note the rejection of claim 11 above. The Instant Claims are functionally equivalent to the above-rejected claim and therefore rejected under same prior-art teachings.

Examiner Requests

18. The Examiner respectfully requests, in the event the Applicants choose to amend or add new claims, that such **claims and their limitations be directly mapped to the specification, which provides support for the subject matter.** This will assist in expediting compact prosecution.

Conclusion

19. All claims are rejected.

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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The art was not relied upon because it is cumulative to the applied rejection.

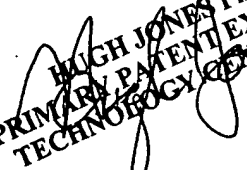
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Silver
Patent Examiner
Art Unit 2128

8/30/06


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PRIMARY PATENT EXAMINER
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